



Contribution ID: 16

Type: not specified

K_S⁰K[±] femtoscopy in Pb-Pb collisions at $\sqrt{s}=2.76$ TeV from the LHC ALICE experiment

Wednesday 4 November 2015 11:10 (25 minutes)

Femtoscopic correlations with the particle pair combinations $K_S^0 K^\pm$ are studied for the first time. This method has been applied to Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV by the LHC ALICE experiment. Correlations in the $K_S^0 K^\pm$ pairs are produced by final-state interactions which proceed through the $a_0(980)$ resonance. It is found that the a_0 final-state interaction describes the shape of the measured $K_S^0 K^\pm$ correlation functions well. The extracted radius parameter for $K_S^0 K^-$ is found to be equal to that for $K_S^0 K^+$ within the errors of the present measurement. Comparing the results of the present study with those from identical-kaon femtoscopic studies by ALICE, mass and coupling parameters for the a_0 resonance are constrained and the branching ratio of non-resonance to resonance final-state interactions for $K_S^0 K^\pm$ is estimated.

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Session Classification: Session 5